

5.3 Elements Knowledge Organiser

Elements and atoms

- An **element** is a substance that only contains one type of atom, it is found on the **Periodic Table**
- Each element has its own unique chemical symbol which is the same in every language, these are also found on the Periodic Table
- An **atom** is the smallest part of which an element can be broken down into
- As there are around 100 types of elements that can occur naturally, there are around 100 different atoms

Key Words

Atom, Element, Compound, Mixture, Molecule, Polymer, Periodic table.

Compounds

- **Compounds** are formed when two or more different elements chemically bond together
- The compound will have different **physical properties** to the elements which make up the compound, for example water is a liquid, but it made from oxygen and hydrogen which are both gases
- Compounds are hard to separate and need a chemical reaction to do this

- When naming a compound, we always mention the metal first and the non metal second
- The name of the metal will not change but the name of the non metal will, for example oxygen can change to oxide
- Chemical formulae tells us how many atoms of each element are in the compound in relation to each other



- The small number tells us the number of each element which is in front of the number

Naming Compounds

Metal + Non-Metal (which contain two elements)

1. The **metal** always goes first.
2. The ending of the **non-metal** changes to 'ide'.

E.g.

Copper + Oxygen → Copper Oxide

Lithium + Fluorine → Lithium Fluoride

To name compounds which have a metal, non-metal and oxygen (three or more elements)

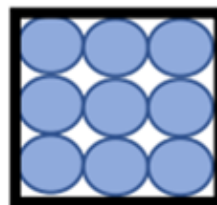
1. The **metal** always goes first.
2. The ending of the **non-metal** changes to 'ate'.

E.g.

Copper, Sulfur, Oxygen

Copper Sulfate

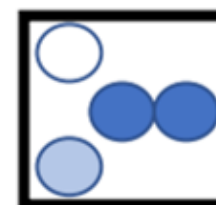
Atoms, Elements, Compounds & Mixtures



This models an element.
There is only one type of atom.



This models a compound.
There are two different elements chemically combined together.



This models a mixture.
There are two or more different elements which are not chemically combined.

Polymers

- **Polymers** are long chains of groups of atoms which are repeated many times
- Natural polymers are not man-made and include wool, cotton, starch and rubber
- Synthetic polymers are man-made and include polythene, polystyrene and nylon